

The **KETO** Diet



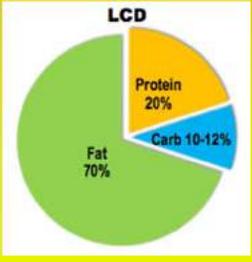
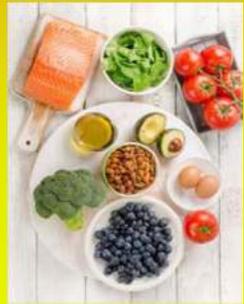
AN INTRODUCTION TO THE KETOGENIC DIET

Beacon Hill Chiropractic & Massage

KE ET

WORKSHOP

Your presenters:
Dr. Michael Schmolke
Lynne Marshall



Macronutrient	Percentage
Fat	70%
Protein	20%
Carb	10-12%

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Our Objectives for This Workshop



Get clear on what the Ketogenic Diet is!

Understand how this works and why!

Provide compelling information about how the KD has been very successful in human health & performance

Get excited about considering this as an option for you!



THE CURRENT PROBLEM WITH STANDARD AMERICAN DIET (SAD)

- Increased gluten and sugar consumption
- Rise in "diabesity"
- Increased neurodegenerative disease
- Carb-based foods ubiquitous
- Leads to carbohydrate intolerance
- Lack of keto-adaptation (ketosis)

**Don't Blame
the Butter**



**For What the
Bread Did!**



WHAT IS A KETOSIS

- Ketosis is a natural metabolic state that our body switches to when there is an absence/shortage of dietary carbohydrates consumed as the main energy source for the body.
- The body increases the breakdown of fat into ketone bodies which are readily used by most tissues as fuel, including muscle and your brain.

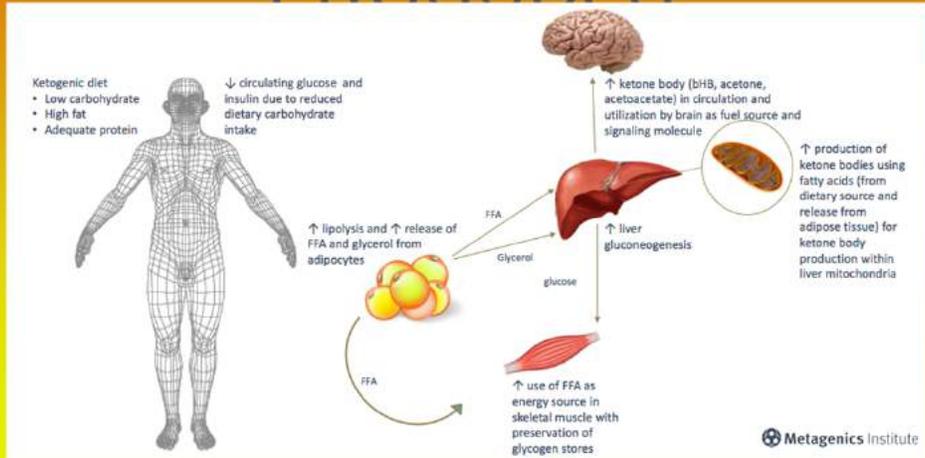


WHAT IS A KETOGENIC DIET

- A ketogenic diet (KD) is a low-carbohydrate way of eating that delivers moderate amounts of high quality protein and high amounts of healthy fat.
- This low carb intake helps the body transition into a state that promotes the breakdown of fats (in diet and your body) to produce ketone bodies and use this as your primary fuel (Ketosis).



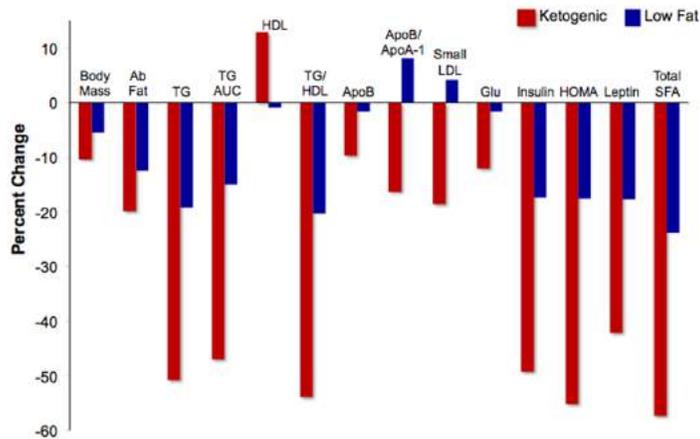
KETO-ADAPTATION THAT A KETOGENIC DIET PRODUCES



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KETOGENIC ADVANTAGES

Keto-Adaptation Reverses Metabolic Syndrome



40 subjects with Metabolic Syndrome after three months on KD

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KETOGENIC ADVANTAGES

Keto-Adaptation Reverses Type-2 Diabetes

JMIR DIABETES McKenzie et al

Original Paper

A Novel Intervention Including Individualized Nutritional Recommendations Reduces Hemoglobin A1c Level, Medication Use, and Weight in Type 2 Diabetes

Amy L. McKenzie¹, PhD, Sarah J Hallberg^{1,2}, DO, MS, Brent C Creighton¹, PhD, Brittanie M Volk¹, RD, PhD, Theresa M Link¹, RD, CDE, Marcy K Altner¹, RD, Robert M Glou¹, RN, BSN, James P McCarter¹, MD, PhD, Jeff S Volek¹, RD, PhD, Stephen D Phinney¹, MD, PhD

JMIR Diabetes. 2017;2(1):e5, published March 7, 2017



SCIENCE FACTS

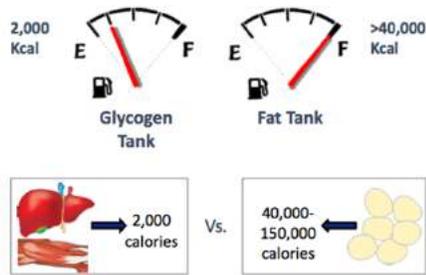


Headlines	Study findings	References
KD increases longevity	Preclinical studies on male mice show that KD <i>reduced midlife mortality</i>	Newman JC et al. <i>Cell Metabolism</i> 2017; 26:547-57 Roberts MN et al. <i>Cell Metabolism</i> 2017; 26:539-46
KD induces mental clarity	Preclinical studies on male rodents show that KD <i>improves learning and memory outcomes in models of neurodegenerative diseases</i>	Kashiwaya Y et al. <i>Neurobiology of Aging</i> 2012; 1-10 Reger M et al. <i>Neurobiology of Aging</i> 2004; 25:311-14 Kim DY et al. <i>PLoS ONE</i> 2012; 7(5):e35476 Zhao W et al. <i>PLoS ONE</i> 2012; 7(11):49191
KD improves cognition	KD research has historically focused on <i>neurological disorders</i> whereas cognitive outcomes in healthy subjects have been <i>anecdotally reported</i>	Kashiwaya Y et al. <i>Neurobiology of Aging</i> 2012; 1-10 Reger M et al. <i>Neurobiology of Aging</i> 2004; 25:311-14 Kim DY et al. <i>PLoS ONE</i> , 2012; 7(5):e35476 Zhao W et al. <i>PLoS ONE</i> 2012; 7(11):49191
KD and mood	Preclinical studies have shown <i>anxiolytic effects</i> associated with KD whereas few case reports have been published showing benefits in humans	Arl C et al. <i>Frontiers in Molecular Neuroscience</i> 2016; 9:137 El-Mallakh RS & Paskitti ME <i>Medical Hypothesis</i> 2001; 57(6):724-26 Bostock ECS et al. <i>Frontiers in Psychology</i> 2017; 8:43



REGULAR OR HIGH OCTANE

Which fuel tank do you want access to?



- **Limited energy stored as glycogen** (liver and muscle)
- Fat deposits provide large energy stores
- High carbohydrate diets reduce metabolic flexibility needed to utilize fat deposits following glycogen depletion
- **Keto-adaptation promotes access to fat deposits as fuel source**

Adapted from: Volek & Phinney, *The Art and Science of Low-Carbohydrate Performance* 2012



KETO MAY NOT BE FOR EVERYONE

A study presented at the European Society of Cardiology backs up this concept and appeared with the title: "Low carbohydrate diets are unsafe and should be avoided." by author, Professor Maciej Banach

This study examined the relationship between low-carbohydrate diets, all-cause death, deaths from coronary heart disease, and cancer in 24,825 people. Compared to those in the highest carbohydrate group, those who ate the lowest carbohydrates had a 32% higher risk of all-cause death over 6 years. In addition, risks of death from heart disease and cancer were increased by 51% and 35%, respectively.

Professor Banach stated; "The reduced intake of fibre and fruits and increased intake of animal protein, cholesterol, and saturated fat with these diets may play a role."

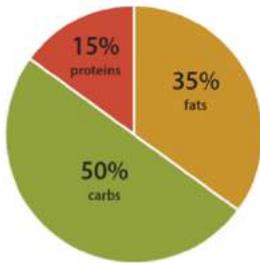
KEY POINT: Walter Willett of the Harvard T. H. Chan School of Public Health and co-author of the study published in *The Lancet*, said in a [statement](#): "These findings bring together several strands that have been controversial. Too much and too little carbohydrate can be harmful but what counts most is the type of fat, protein, and carbohydrate."



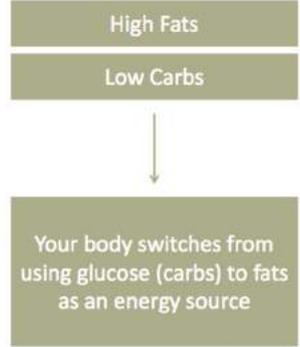
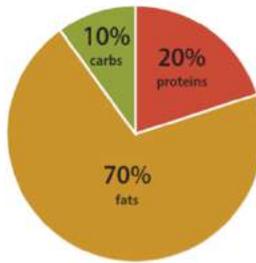
HOW DOES THE KD LOOK

What is a Ketogenic Diet?

Standard American Diet¹
(as % of total kcal)



Typical Ketogenic Diet²
(as % of total kcal)



1. Freedman MR, King J, Kennedy E. Popular diets: a scientific review. *Obes Res* 2001; 9(suppl 1):35,115,125.
2. Volek JS, et al. Comparison of energy-restricted very low-carbohydrate and low-fat diets on weight loss and body composition in overweight men and women. *Nutr Metr*. 2004 Nov;1:13.



KETO FOOD GUIDE

Keto Food List



What's in
YOUR Diet?



KETO FOOD GUIDE



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HOW DO WE KNOW WE ARE IN THE KETOSIS STATE

How to test ketone levels and monitor ketosis?

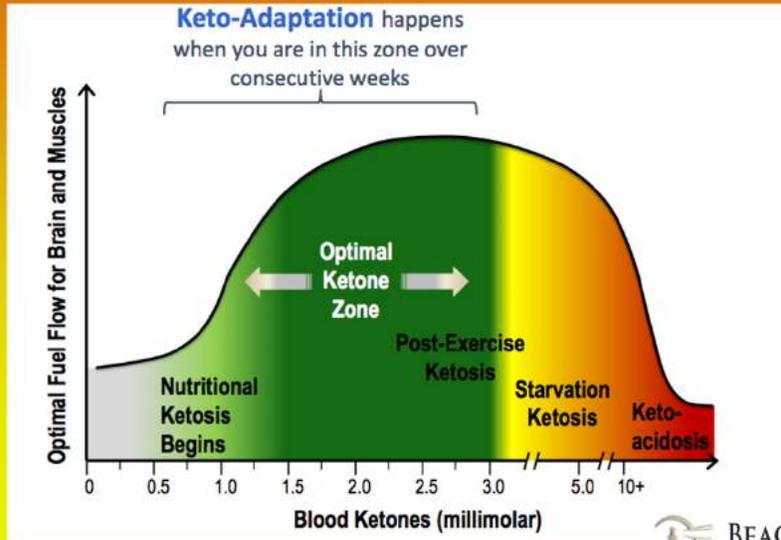
- **Urine:** measures urinary excretion of acetoacetate - although this is the easiest and most common test, it may provide false negative results following keto-adaptation
- **Blood:** finger stick measuring circulating β HB levels - most accurate
- **Breath:** measures breath acetone



- **Optimal levels of ketosis**
 - Overnight fasting: 0.2-0.5mM
 - Nutritional Ketosis (KD): 0.5-3.0mM
 - KD with exogenous ketones: 0.5-8.0mM
 - Ketoacidosis: >10mM

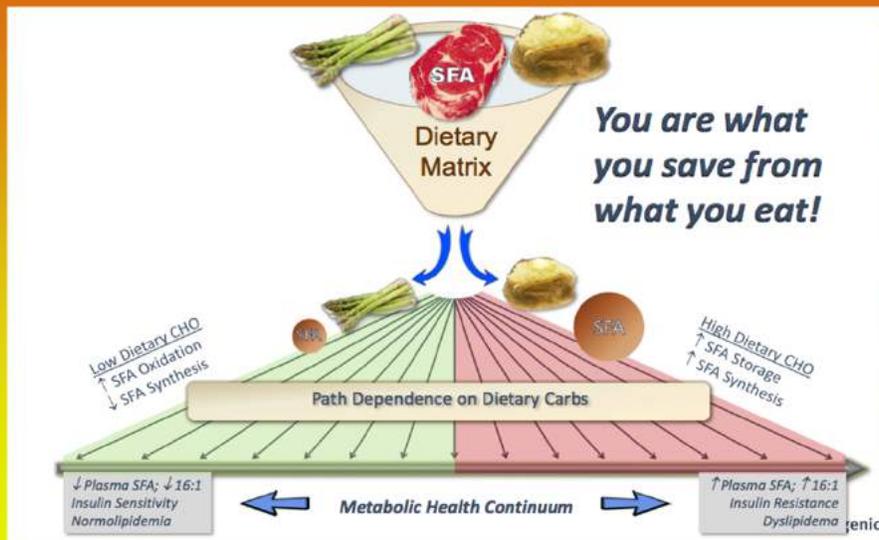
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OPTIMAL STATE OF KETONES



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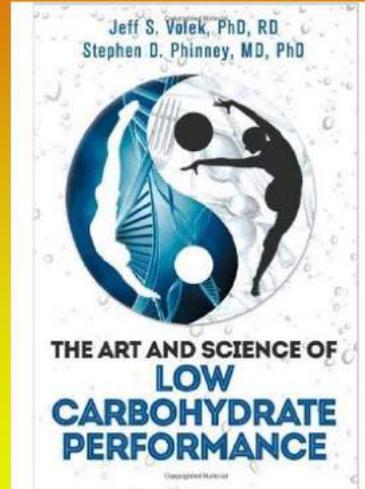
CARBS TIP THE BALANCE



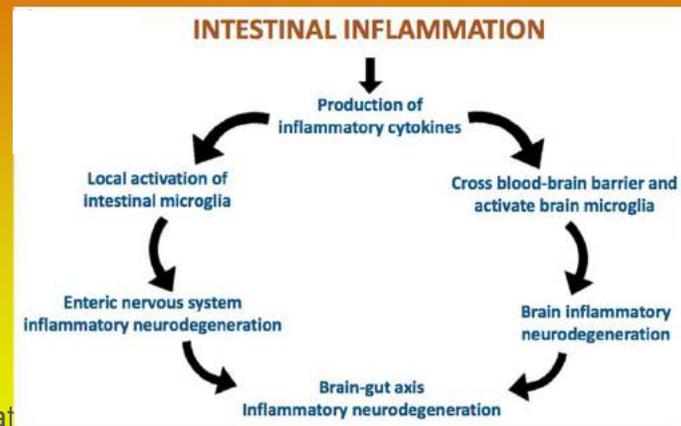
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KETO HEALTH BENEFITS

- Low carb diets = anti-inflammatory
- Lower oxidative stress during exercise
- Faster recovery post exercise
- Much less muscle glycogen dependency
- With KD adaptation, faster burning of saturated fats = lower risk of fat in diet
- Lower oxidation and inflammation, gut health and immunity are improved



INFLAMMATION



- Implications for concussions, Alzheimer's and cognitive function are enormous



KETO EXERCISE BENEFITS

- A KD diet spares protein utilization as fuel, and quicker recovery post exercise
- Lower levels of lactic acid in mm from training
- Ketones are a more pure fuel source
 - = less ROS and improved antioxidant defences



INTERMITTENT FASTING THE BENEFITS ON THE KD

- Gets into state of ketosis faster
- Drop weight faster
- Increase mental clarity
- Improve health:
 - Enhance muscle growth
 - Reduce inflammation
 - Improve insulin sensitivity



Longo VD, Mark PM. *Cell Metabolism*. Feb 19, 2014;181-92
 Brandhorst S, et al. *Cell Metabolism*. Jan 22, 2015;86-99

INTERMITTENT FASTING: NOT UNIQUE TO KETO DIET

- Japanese cell biologist Yoshinori Ohsumi won the [Nobel Prize in Medicine in 2016](#) for his research on how cells recycle and renew their content, a process called autophagy.
- Fasting has been part of religious, spiritual, and health practices for thousands of years.

"[Autophagy] contributes to a range of physiological functions, such as inhibiting cancer cells and aging, eliminating pathogens and cleaning the insides of cells."

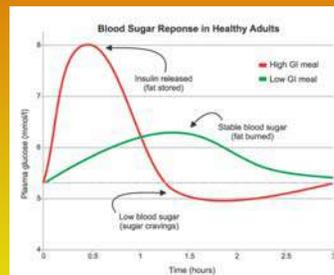


<https://youtu.be/Hqs1WzTwBEU>



WHAT ABOUT TRACKING MACRONUTRIENTS AKA CALORIES AND DAILY INTAKE AMOUNTS??

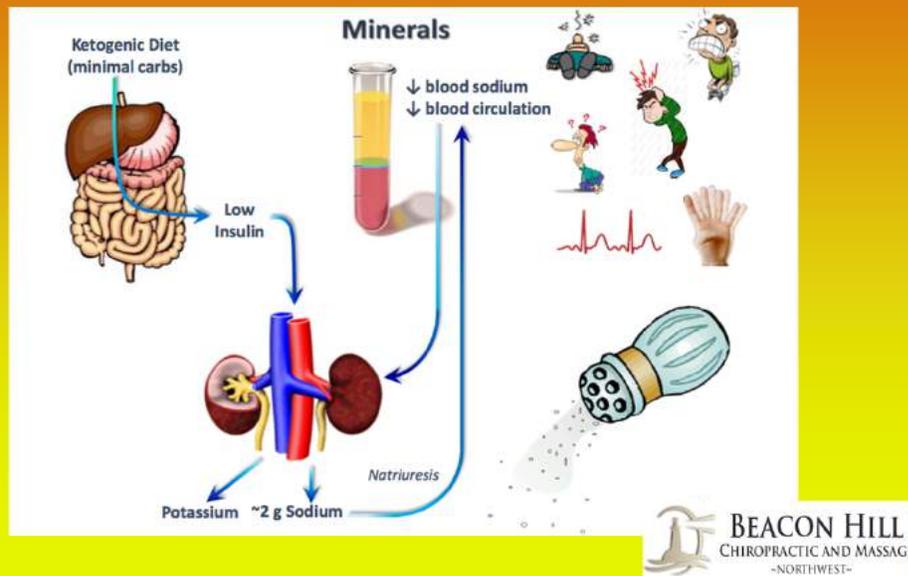
- Food timing may be more relevant, but this is easy or hard related to your food choices! HF vs HC
- Calories are STILL relevant. The discussion should focus more around the concept of



- **Satiation** may refer to: Satiety, feeling "full" and satisfied after eating; the cessation of hunger



THINGS TO BE AWARE OF ON THE KD: THE KETO FLU



THINGS TO CONSIDER ON THE KETO DIET

1. "Dirty Keto" - dirty keto does not care as much about where your fat sources come from, or paying as much attention to vegetables and other keto-friendly sources of fiber
2. Lacking adequate antioxidants by making the wrong choices for veggies in the KD strategy.

RESOURCES AVAILABLE ARE NUMEROUS



WHAT IS NEXT AT BEACON HILL CHIRO & MASSAGE??

- November Community Collective evening exploring “Self Care - do’s and don’ts discussion”
- December - 12 Days of Christmas Prizes & Give Aways for our practise members
- January Theme: New Beginnings
 - Workshop January - Keto II - Implementing the Keto Diet into a successful life style of eating and living